



persico corrected feb06.ST25
SEQUENCE LISTING

<110> Minchiotti, Gabriella
Persico, Maria
Parisi, Silvia

<120> METHOD FOR PROMOTING DIFFERENTIATION OF STAMINAL CELL

<130> AE 89363

<140> US 10/550,498

<141> 2005-09-20

<160> 42

<170> PatentIn version 3.3

<210> 1

<211> 22

<212> DNA

<213> Artificial

<220>

<223> primer nodal F

<220>

<221> primer_bind

<222> (1)..(22)

<400> 1

ttccttctca ggtcacgttt gc

22

<210> 2

<211> 21

<212> DNA

<213> Artificial

<220>

<223> Primer nodal R

<220>

<221> primer_bind

<222> (1)..(21)

<400> 2

ggtggggttg gtatcgtttc a

21

<210> 3

<211> 25

<212> DNA

<213> Artificial

<220>

<223> primer alk-4 F

<220>

<221> primer_bind

<222> (1)..(25)

persico corrected feb06.ST25

<400> 3
aaggatccag gctctgctgt gtgcc 25

<210> 4
<211> 26
<212> DNA
<213> Artificial

<220>
<223> primer alk-4 R

<220>
<221> primer_bind
<222> (1)..(26)

<400> 4
acggatccat gtccaacctc tggcgg 26

<210> 5
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer ActRIIB F

<220>
<221> primer_bind
<222> (1)..(20)

<400> 5
atgtgccgtg gtgtcgtggt 20

<210> 6
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer ActRIIB R

<220>
<221> primer_bind
<222> (1)..(20)

<400> 6
gacctcctga tcagggatac 20

<210> 7
<211> 24
<212> DNA
<213> Artificial

<220>
<223> primer MLC2v F

<220>
 <221> primer_bind
 <222> (1)..(24)

 <400> 7
 gccaagaagc ggatagaagg cggg 24

 <210> 8
 <211> 24
 <212> DNA
 <213> Artificial

 <220>
 <223> primer MLC2v R

 <220>
 <221> primer_bind
 <222> (1)..(24)

 <400> 8
 ctgtggttca gggctcagtc cttc 24

 <210> 9
 <211> 24
 <212> DNA
 <213> Artificial

 <220>
 <223> primer cardiac alphaMHC F

 <220>
 <221> primer_bind
 <222> (1)..(24)

 <400> 9
 ggaagagtga gcggcgcatac aagg 24

 <210> 10
 <211> 22
 <212> DNA
 <213> Artificial

 <220>
 <223> primer cardiac alphaMHC R

 <220>
 <221> primer_bind
 <222> (1)..(22)

 <400> 10
 ctgctggaga gggtattcct cg 22

 <210> 11
 <211> 25

persico corrected feb06.ST25

<212> DNA
<213> Artificial

<220>
<223> primer HPRT F

<220>
<221> primer_bind
<222> (1)..(25)

<400> 11
cctgctggat tacattaaag cactg

25

<210> 12
<211> 25
<212> DNA
<213> Artificial

<220>
<223> primer HPRT R

<220>
<221> primer_bind
<222> (1)..(25)

<400> 12
cctgaagtac tcattatagt caagg

25

<210> 13
<211> 27
<212> DNA
<213> Artificial

<220>
<223> mut Asn63-Ile

<220>
<221> primer_bind
<222> (1)..(27)

<400> 13
gtaagtcgct tattaact tgctgtc

27

<210> 14
<211> 27
<212> DNA
<213> Artificial

<220>
<223> mut Asn63-Ile

<220>
<221> primer_bind
<222> (1)..(27)

<400> 14

persico corrected feb06.ST25
gacagcaagt ttttaataagc gacttac 27

<210> 15
<211> 38
<212> DNA
<213> Artificial

<220>
<223> mut Gly71-Asn

<220>
<221> primer_bind
<222> (1)..(38)

<400> 15
cttgctgtct gaatggaaac acttgcattcc tgggggtcc 38

<210> 16
<211> 38
<212> DNA
<213> Artificial

<220>
<223> mut Gly71-Asn

<220>
<221> primer_bind
<222> (1)..(38)

<400> 16
ggaccccagg atgcaagtgt ttccattcag acagcaag 38

<210> 17
<211> 23
<212> DNA
<213> Artificial

<220>
<223> mut Thr72-Ala

<220>
<221> primer_bind
<222> (1)..(23)

<400> 17
gaatggaggg gcttgcattcc tgg 23

<210> 18
<211> 23
<212> DNA
<213> Artificial

<220>
<223> mut Thr72-Ala

persico corrected feb06.ST25

```

<220>
<221> primer_bind
<222> (1)..(23)

<400> 18
ccaggatgca agccccctcca ttc                                     23

<210> 19
<211> 29
<212> DNA
<213> Artificial

<220>
<223> mut Ser77-Ala

<220>
<221> primer_bind
<222> (1)..(29)

<400> 19
cttgcatacct gggggccttc tgtgcctgc                               29

<210> 20
<211> 29
<212> DNA
<213> Artificial

<220>
<223> mut Ser77-Ala

<220>
<221> primer_bind
<222> (1)..(29)

<400> 20
gcaggcacag aaggccccca ggatgcaag                               29

<210> 21
<211> 31
<212> DNA
<213> Artificial

<220>
<223> mut Phe78-Ala

<220>
<221> primer_bind
<222> (1)..(31)

<400> 21
gcatacctggg gtccgcctgt gcctgccctc c                           31

<210> 22
<211> 31
<212> DNA
<213> Artificial

```

persico corrected feb06.ST25

<220>
<223> mut Phe78-Ala

<220>
<221> primer_bind
<222> (1)..(31)

<400> 22
gcatcctggg gtccgcctgt gcctgccctc c

31

<210> 23
<211> 31
<212> DNA
<213> Artificial

<220>
<223> mut Phe78-Trp

<220>
<221> primer_bind
<222> (1)..(31)

<400> 23
gcatcctggg gtcctggtgt gcctgccctc c

31

<210> 24
<211> 31
<212> DNA
<213> Artificial

<220>
<223> mut Phe78-Trp

<220>
<221> primer_bind
<222> (1)..(31)

<400> 24
ggagggcagg cacaccagga ccccaggatg c

31

<210> 25
<211> 32
<212> DNA
<213> Artificial

<220>
<223> mut His104-Ala

<220>
<221> primer_bind
<222> (1)..(32)

<400> 25
gtgggtctat cctcgctggc acctggctgc cc

32

persico corrected feb06.ST25

<210> 26
 <211> 32
 <212> DNA
 <213> Artificial

<220>
 <223> mut His104-Ala

<220>
 <221> primer_bind
 <222> (1)..(32)

<400> 26
 gggcagccag gtgccagcga ggatagaccc ac

32

<210> 27
 <211> 21
 <212> DNA
 <213> Artificial

<220>
 <223> mut Trp107-Gly

<220>
 <221> primer_bind
 <222> (1)..(21)

<400> 27
 catggcaccg ggctgccc aa g

21

<210> 28
 <211> 21
 <212> DNA
 <213> Artificial

<220>
 <223> mut Trp107-Gly

<220>
 <221> primer_bind
 <222> (1)..(21)

<400> 28
 cttgggcagc ccggtgcat g

21

<210> 29
 <211> 31
 <212> DNA
 <213> Artificial

<220>
 <223> mut Arg116-Ala

<220>
 <221> primer_bind

persico corrected feb06.ST25

<222> (1)..(31)

<400> 29

gtgttcctg tgcgcatgct ggcacggcca g

31

<210> 30

<211> 31

<212> DNA

<213> Artificial

<220>

<223> mut Arg116-Ala

<220>

<221> primer_bind

<222> (1)..(31)

<400> 30

ctggccgtgc cagcatgctg acagggaaca c

31

<210> 31

<211> 32

<212> DNA

<213> Artificial

<220>

<223> mut Leu122-Asn

<220>

<221> primer_bind

<222> (1)..(32)

<400> 31

gctggcacgg ccagaaccac tgtcttcctc ag

32

<210> 32

<211> 32

<212> DNA

<213> Artificial

<220>

<223> mut Leu122-Asn

<220>

<221> primer_bind

<222> (1)..(32)

<400> 32

ctgaggaaga cagtggttct ggccgtgcca gc

32

<210> 33

<211> 171

<212> PRT

<213> Artificial

<220>

persico corrected feb06.ST25

<223> m cripto

<220>

<221> VARIANT

<222> (1)..(171)

<400> 33

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Arg Asp Leu Ala Ile Arg Asp
20 25 30

Asn Ser Ile Trp Asp Gln Lys Glu Pro Ala Val Arg Asp Arg Ser Phe
35 40 45

Gln Phe Val Pro Ser Val Gly Ile Gln Asn Ser Lys Ser Leu Asn Lys
50 55 60

Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu Gly Ser Phe Cys Ala
65 70 75 80

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
85 90 95

Glu His Cys Gly Ser Ile Leu His Gly Thr Trp Leu Pro Lys Lys Cys
100 105 110

Ser Leu Cys Arg Cys Trp His Gly Gln Leu His Cys Leu Pro Gln Thr
115 120 125

Phe Leu Pro Gly Cys Asp Gly His Val Met Asp Gln Asp Leu Lys Ala
130 135 140

Ser Arg Thr Pro Cys Gln Thr Pro Ser Val Thr Thr Thr Phe Met Leu
145 150 155 160

Ala Gly Ala Cys Leu Phe Leu Asp Met Lys Val
165 170

<210> 34

<211> 156

<212> PRT

<213> Artificial

<220>

<223> secreted m cripto

<220>

persico corrected feb06.ST25

<221> VARIANT
<222> (1)..(156)

<400> 34

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Arg Asp Leu Ala Ile Arg Asp
20 25 30

Asn Ser Ile Trp Asp Gln Lys Glu Pro Ala Val Arg Asp Arg Ser Phe
35 40 45

Gln Phe Val Pro Ser Val Gly Ile Gln Asn Ser Lys Ser Leu Asn Lys
50 55 60

Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu Gly Ser Phe Cys Ala
65 70 75 80

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
85 90 95

Glu His Cys Gly Ser Ile Leu His Gly Thr Trp Leu Pro Lys Lys Cys
100 105 110

Ser Leu Cys Arg Cys Trp His Gly Gln Leu His Cys Leu Pro Gln Thr
115 120 125

Phe Leu Pro Gly Cys Asp Gly His Val Met Asp Gln Asp Leu Lys Ala
130 135 140

Ser Arg Thr Pro Cys Gln Thr Pro Ser Val Thr Thr
145 150 155

<210> 35
<211> 166
<212> PRT
<213> Artificial

<220>
<223> m cripto His

<220>
<221> VARIANT
<222> (1)..(166)

<400> 35

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

persico corrected feb06.ST25

Ala Phe Glu Phe Gly Pro Val Ala Gly Arg Asp Leu Ala Ile Arg Asp
20 25 30

Asn Ser Ile Trp Asp Gln Lys Glu Pro Ala Val Arg Asp Arg Ser Phe
35 40 45

Gln Phe Val Pro Ser Val Gly Ile Gln Asn Ser Lys Ser Leu Asn Lys
50 55 60

Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu Gly Ser Phe Cys Ala
65 70 75 80

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
85 90 95

Glu His Cys Gly Ser Ile Leu His Gly Thr Trp Leu Pro Lys Lys Cys
100 105 110

Ser Leu Cys Arg Cys Trp His Gly Gln Leu His Cys Leu Pro Gln Thr
115 120 125

Phe Leu Pro Gly Cys Asp Gly His Val Met Asp Gln Asp Leu Lys Ala
130 135 140

Ser Arg Thr Pro Cys Gln Thr Pro Ser Val Thr Thr Thr Asn Ser Gly
145 150 155 160

His His His His His His
165

<210> 36
<211> 129
<212> PRT
<213> Artificial

<220>
<223> EGF-CFC m cripto

<220>
<221> VARIANT
<222> (1)..(129)

<400> 36

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Ser Val Gly Ile Gln Asn Ser
20 25 30

persico corrected feb06.ST25

Lys Ser Leu Asn Lys Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu
35 40 45

Gly Ser Phe Cys Ala Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu
50 55 60

His Asp Val Arg Lys Glu His Cys Gly Ser Ile Leu His Gly Thr Trp
65 70 75 80

Leu Pro Lys Lys Cys Ser Leu Cys Arg Cys Trp His Gly Gln Leu His
85 90 95

Cys Leu Pro Gln Thr Phe Leu Pro Gly Cys Asp Gly His Val Met Asp
100 105 110

Gln Asp Leu Lys Ala Ser Arg Thr Pro Cys Gln Thr Pro Ser Val Thr
115 120 125

Thr

<210> 37
<211> 139
<212> PRT
<213> Artificial

<220>
<223> EGF-CFC m cripto His

<220>
<221> VARIANT
<222> (1)..(139)

<400> 37

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Ser Val Gly Ile Gln Asn Ser
20 25 30

Lys Ser Leu Asn Lys Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu
35 40 45

Gly Ser Phe Cys Ala Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu
50 55 60

His Asp Val Arg Lys Glu His Cys Gly Ser Ile Leu His Gly Thr Trp
65 70 75 80

persico corrected feb06.ST25

Leu Pro Lys Lys Cys Ser Leu Cys Arg Cys Trp His Gly Gln Leu His
85 90 95

Cys Leu Pro Gln Thr Phe Leu Pro Gly Cys Asp Gly His Val Met Asp
100 105 110

Gln Asp Leu Lys Ala Ser Arg Thr Pro Cys Gln Thr Pro Ser Val Thr
115 120 125

Thr Thr Asn Ser Gly His His His His His His
130 135

<210> 38
<211> 69
<212> PRT
<213> Artificial

<220>
<223> EGF short m cripto

<220>
<221> VARIANT
<222> (1)..(69)

<400> 38

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Ser Val Gly Ile Gln Asn Ser
20 25 30

Lys Ser Leu Asn Lys Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu
35 40 45

Gly Ser Phe Cys Ala Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu
50 55 60

His Asp Val Arg Lys
65

<210> 39
<211> 96
<212> PRT
<213> Artificial

<220>
<223> EGF long m cripto

<220>
<221> VARIANT

persico corrected feb06.ST25

<222> (1)..(96)

<400> 39

Met Gly Tyr Phe Ser Ser Ser Val Val Leu Leu Val Ala Ile Ser Ser
1 5 10 15

Ala Phe Glu Phe Gly Pro Val Ala Gly Arg Asp Leu Ala Ile Arg Asp
20 25 30

Asn Ser Ile Trp Asp Gln Lys Glu Pro Ala Val Arg Asp Arg Ser Phe
35 40 45

Gln Phe Val Pro Ser Val Gly Ile Gln Asn Ser Lys Ser Leu Asn Lys
50 55 60

Thr Cys Cys Leu Asn Gly Gly Thr Cys Ile Leu Gly Ser Phe Cys Ala
65 70 75 80

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
85 90 95

<210> 40

<211> 188

<212> PRT

<213> Artificial

<220>

<223> h cripto

<220>

<221> VARIANT

<222> (1)..(188)

<400> 40

Met Asp Cys Arg Lys Met Ala Arg Phe Ser Tyr Ser Val Ile Trp Ile
1 5 10 15

Met Ala Ile Ser Lys Val Phe Glu Leu Gly Leu Val Ala Gly Leu Gly
20 25 30

His Gln Glu Phe Ala Arg Pro Ser Arg Gly Tyr Leu Ala Phe Arg Asp
35 40 45

Asp Ser Ile Trp Pro Gln Glu Glu Pro Ala Ile Arg Pro Arg Ser Ser
50 55 60

Gln Arg Val Pro Pro Met Gly Ile Gln His Ser Lys Glu Leu Asn Arg
65 70 75 80

persico corrected feb06.ST25

Thr Cys Cys Leu Asn Gly Gly Thr Cys Met Leu Gly Ser Phe Cys Ala
85 90 95

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
100 105 110

Glu Asn Cys Gly Ser Val Pro His Asp Thr Trp Leu Pro Lys Lys Cys
115 120 125

Ser Leu Cys Lys Cys Trp His Gly Gln Leu Arg Cys Phe Pro Gln Ala
130 135 140

Phe Leu Pro Gly Cys Asp Gly Leu Val Met Asp Glu His Leu Val Ala
145 150 155 160

Ser Arg Thr Pro Glu Leu Pro Pro Ser Ala Arg Thr Thr Thr Phe Met
165 170 175

Leu Val Gly Ala Cys Leu Phe Leu Asp Met Lys Val
180 185

<210> 41
<211> 173
<212> PRT
<213> Artificial

<220>
<223> h cripto secreted

<220>
<221> VARIANT
<222> (1)..(173)

<400> 41

Met Asp Cys Arg Lys Met Ala Arg Phe Ser Tyr Ser Val Ile Trp Ile
1 5 10 15

Met Ala Ile Ser Lys Val Phe Glu Leu Gly Leu Val Ala Gly Leu Gly
20 25 30

His Gln Glu Phe Ala Arg Pro Ser Arg Gly Tyr Leu Ala Phe Arg Asp
35 40 45

Asp Ser Ile Trp Pro Gln Glu Glu Pro Ala Ile Arg Pro Arg Ser Ser
50 55 60

Gln Arg Val Pro Pro Met Gly Ile Gln His Ser Lys Glu Leu Asn Arg
65 70 75 80

persico corrected feb06.ST25
 Thr Cys Cys Leu Asn Gly Gly Thr Cys Met Leu Gly Ser Phe Cys Ala
 85 90 95

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
 100 105 110

Glu Asn Cys Gly Ser Val Pro His Asp Thr Trp Leu Pro Lys Lys Cys
 115 120 125

Ser Leu Cys Lys Cys Trp His Gly Gln Leu Arg Cys Phe Pro Gln Ala
 130 135 140

Phe Leu Pro Gly Cys Asp Gly Leu Val Met Asp Glu His Leu Val Ala
 145 150 155 160

Ser Arg Thr Pro Glu Leu Pro Pro Ser Ala Arg Thr Thr
 165 170

<210> 42
 <211> 183
 <212> PRT
 <213> Artificial

<220>
 <223> h cripto secreted His

<220>
 <221> VARIANT
 <222> (1)..(183)

<400> 42

Met Asp Cys Arg Lys Met Ala Arg Phe Ser Tyr Ser Val Ile Trp Ile
 1 5 10 15

Met Ala Ile Ser Lys Val Phe Glu Leu Gly Leu Val Ala Gly Leu Gly
 20 25 30

His Gln Glu Phe Ala Arg Pro Ser Arg Gly Tyr Leu Ala Phe Arg Asp
 35 40 45

Asp Ser Ile Trp Pro Gln Glu Glu Pro Ala Ile Arg Pro Arg Ser Ser
 50 55 60

Gln Arg Val Pro Pro Met Gly Ile Gln His Ser Lys Glu Leu Asn Arg
 65 70 75 80

Thr Cys Cys Leu Asn Gly Gly Thr Cys Met Leu Gly Ser Phe Cys Ala
 85 90 95

persico corrected feb06.ST25

Cys Pro Pro Ser Phe Tyr Gly Arg Asn Cys Glu His Asp Val Arg Lys
100 105 110

Glu Asn Cys Gly Ser Val Pro His Asp Thr Trp Leu Pro Lys Lys Cys
115 120 125

Ser Leu Cys Lys Cys Trp His Gly Gln Leu Arg Cys Phe Pro Gln Ala
130 135 140

Phe Leu Pro Gly Cys Asp Gly Leu Val Met Asp Glu His Leu Val Ala
145 150 155 160

Ser Arg Thr Pro Glu Leu Pro Pro Ser Ala Arg Thr Thr Thr Asn Ser
165 170 175

Gly His His His His His His
180